UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/484,549	01/18/2000	Korbin Van Dyke	01000.9901080	9816

24228 7590 08/20/2003

MARKISON & RECKAMP, PC
PO BOX 06229
WACKER DR
CHICAGO, IL 60606-0229

EXAMINER	
ALI, SYED J	
ART UNIT	**PAPER NUMBER**
2127	5

DATE MAILED: 08/20/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/484,549	Applicant(s) VAN DYKE ET AL.	
	Examiner Syed J Ali	Art Unit 2127	

-- The MAILING DATE of this communication appears on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. This office action is in response to Amendment A, paper number 4, which was received June 19, 2003. Applicant's arguments have been fully considered but they not persuasive. Claims 1-14 are presented for examination.

2. The text of those sections of Title 35, U.S. code not included in this office action can be found in a prior office action.

Claim Rejections - 35 USC § 112

3. The amendments to claims 6 and 14 are sufficient to render the previous rejections under 35 USC § 112 moot. The rejection is hereby withdrawn.

Response to Arguments

4. Applicant argues on page 6, "*Sending a task to pre-programmed servers is not identifying available processing resources...[and] providing to the available processing resources functional programs and initial data corresponding to the tasks.*" Furthermore, the argument is presented that Broder et al. (USPN 5,991,808) (hereinafter Broder) teaches away from the claimed invention since the servers of Broder "*are capable of executing a given task, without having a corresponding program passed to such servers, [indicating] that such programs were known to be present before the identification of a server being available.*" This argument is presented to suggest that Broder does not meet the limitations of "**identifying available processing resources**" and "**providing to the available processing resources functional programs**."

Concerning the limitation of "**identifying available processing resources**", this is in fact taught by Broder not only in the sense that the system identifies the least loaded server (col. 5 lines 40-63, "a number of severs selected uniformly at random are queried for load information by the client having a task to be performed"), which is inherently available for processing tasks, but also due to the fact that the system of Broder includes sufficient space within the server's processing queue that there will always be an available server (col. 4 lines 51-58, "the server queues are sufficiently sized such that there is always space available in the queues of many of the servers during maximum loading of the system"). Therefore, Broder meets the limitation in the sense that a selection of which server is *least loaded* among a set of servers, many of which are available for processing tasks.

Furthermore, concerning the limitation of "**providing to the available processing resources functional programs**", Examiner asserts that Broder does indeed disclose such a concept (col. 4 lines 29-50, "the actual task request could be generated elsewhere and conveyed to the client, for example, over the network 1, and then conveyed by the client to the server which is selected to perform the applicable task"). This teaching of Broder shows that once the server that is least loaded is identified, the service request is then forwarded to that particular server. All data that is associated with that task is forwarded to the server along with the request. It is well known in the art that a task can have a broad variety of interpretations, such as including a set of threads of execution, a set of instructions, a single instruction, etc. It can therefore be seen that a task, in certain circumstances, may inherently have functional programs associated with it, simply to allow execution of the program to proceed. Specifically, in the case where a task is made

up of several threads of execution, each thread may have separate functional units that work together to perform a larger task. It follows that the disclosure of Broder in fact has a broader interpretation than the claimed invention, and therefore meets the limitations set forth inherently.

5. Applicant argues on page 7, "*A communication interface connecting multiple processing nodes is not a plurality of processors coupled to a bus, [and] an input/output interface coupled to the bus.*" Furthermore, the argument is presented that Fitch et al. (USPN 5,526,521) (hereinafter Fitch) "*only discloses processors as being coupled to the communications* interface" and that the "*adding of input/output interfaces to communication interface 16 would reduce its ability to efficiently handle the data communications between the four processing nodes by at least increasing the traffic on such communications interface.*" Applicant adds that in spite of Fitch's disclosure that the kernel inherently understands that it is part of a larger system, this does not suggest the use of input/output devices since "*parallel processing environment 10 is absent any input/output interfaces connected to input/output devices.*" This argument is presented to suggest that Fitch fails to disclose the limitations of "**an input/output interface**", "**a plurality of input/output devices coupled to the input/output interface.**"

Examiner respectfully disagrees with Applicant's argument. Specifically, the communications interface is specifically referred to as being used for bi-directional transfer of data (col. 3 lines 39-44). Although the interface is not specifically referred to as a bus, it is well known in the art that a bi-directional data transfer interface is without question a bus. Additionally, it is the Examiner's belief that the context of Fitch's

disclosure wherein each control system inherently understands that it is part of a larger system was wrongly limited in scope. Specifically, Applicant refers to the parallel processing environment 10 (Fig. 1). However, this is merely a bare bones processing system, and the disclosure of Fitch is not limited in scope to this system alone. The parallel processing environment of Fig. 1 is merely one embodiment of a system that is capable of specifying multiple contexts (col. 3 lines 29-38). A fully functional data processing system would also include multiple input/output devices, including but not limited to a mouse, keyboard, monitor, printer, speakers, disk drive, etc. In all modern computing systems, these are connected via a communications interface to a processor that processes all information for the system. Therefore, the communications interface of Fitch does inherently suggest an input/output interface as well as a plurality of input/output interfaces coupled to the input/output interface, and interaction with those devices, as claimed.

6. Applicant argues on page 8, "*Segregating process operations on a single processor in time is not program code configured to cause a first portion of the plurality of processors to interact with a first input/output device of the plurality of input/output devices...or...to cause a second portion of the plurality of processors to interact with a second input/output device of the plurality of input/output devices.*" Furthermore, the argument is presented that Fitch "*is absent discussion disclosing or suggesting that particular processes are programmed to interact with any subset of any set of input/output devices.*" This argument is presented to suggest that Fitch fails to disclose

the limitations of "**[interacting] with a first input/output device**", and "**[interacting] with a second input/output device**."

Examiner respectfully disagrees with Applicant's argument. Specifically, as discussed above, each kernel knows that it may be a part of a larger system, e.g., a data processing system with a plurality of input/output devices. The dividing of the data processing system into various control contexts suggests that each address space may interact with the devices that may be present on that address space (col. 3 line 53 - col. 4 line 2, "every processing node 12 in the parallel data processing environment has a single address space 'ADDR 0', 'ADDR1 ', 'ADDR 2' and 'ADDR 3' associated therewith", "The execution within a given address space can either affect that address space or produce an equivalent effect in an address space an object named within the data, i.e., through the communications interface"). This disclosure suggests that the processors can be divided into groups, each within its own address space and separate control context. Furthermore, the statement that the execution can affect an object through the communications interface suggests that each processing node can interact with any input/output device or other device connected to the communications interface. It readily follows that distinct groups of processors can interact with distinct groups of input/output devices, depending on the instruction set that the processor is intended to emulate, or dependent on any other factors that would be useful in the art.

7. Applicant argues on page 9, Broder "*only queries processes as to their current load rather than what instruction sets they handle, i.e., only shows concern for whether a process has available time for more work rather than what type of work the processor is*

performing." Furthermore, Applicant adds that Fitch "*does not...teach or suggest the use of different instruction sets by different processors.*" Applicant argues these points to suggest that the combination of Broder and Fitch do not disclose the limitations of dependent claim 2.

Examiner respectfully disagrees with Applicant's argument. Specifically, the citation in Broder that suggests the use of different processor speeds was noted to indicate that Broder discloses a way of having different processor types within a homogeneous system. Although this does not directly suggest the use of different instruction sets, it does suggest the use of processors having differing functionality. Furthermore, Applicant contends that Broder teaches away from the claimed invention since Broder does not query the processing resources to determine what type of work the processor is performing. However, this is not what is claimed in dependent claim 2. The only limitation within dependent claim 2 concerning querying the processors is "**identifying available processing resources in the homogeneous multiprocessor environment**." Clearly, this does not refer to querying the type of instruction set the processing resources execute. Rather, it is interpreted that the identification is meant to determine if a processing resource is available, which Broder clearly does, as discussed above. Furthermore, Fitch does in fact disclose execution of different instruction sets by different processors (col. 3 line 44 - col. 4 line 14). Within this section of disclosure by Fitch, it is disclosed that each processing node (plurality of processors) has its own address space capable of executing separate control contexts. Furthermore, the processors are capable of switching contexts, which typically require the loading of an operating system context, in order to service a particular request. Clearly, this suggests

the capability of different groups of processors executing different instruction sets. Finally, Applicant's suggestion that the motivation to combine is conclusory is faulty, in the sense that a need has been presented that would suggest the combination of Broder and Fitch. Specifically, it is well known in the art that certain systems, e.g., multimedia systems may execute various types of tasks, requiring different control contexts. Furthermore, such a system would require certain guarantees of service, or quality of service (QoS) that can be provided by a robust load balancing system. To that end, the combination of Broder and Fitch provide both of these features, thus providing a motivation to combine.

8. Regarding dependent claims 3 and 5, Applicant submits that they are allowable for similar reasons as discussed for dependent claim 2. However, the arguments concerning dependent claim 2 have been discussed at length above. Therefore, claims 3 and 5 stand rejected as in the previous Office Action.

9. Regarding dependent claims 6-11, Applicant submits that they are allowable because they dependent on claims for which arguments have been presented. However, the arguments concerning the parent claims therein have been addressed, and therefore, claims 6-11 stand rejected as in the previous Office Action.

10. Applicant argues that Fitch teaches away from the claimed invention since Fitch "*includes parallel processing, but limits its use of its kernel code to controlling non-parallel processing.*" Furthermore, Applicant suggests that Broder could not be

combined with Fitch since Broder "*is absent any disclosure regarding the use of kernel code.*"

Regarding the latter argument, it is noted that Broder does not disclose the use of kernel code. However, that is the reason why Fitch was cited in combination therein. Furthermore, the suggestion that Fitch teaches away from the claimed invention is in error since the idea of parallel processing presented by Fitch is amongst the processing nodes, rather than a single processor. It is well known in the art that even a single processor that does *emulate* parallel processing still must execute instructions serially. To that end, the dynamic allocation of processes among nodes, as disclosed by Broder in combination with the execution of kernel code, as in Fitch, does meet the limitations of the present claim, and would suggest the combination of the references therein.

11. Applicant argues on page 13 that Frankel lacks multiple processors, and therefore does not disclose a plurality of processor executing kernels providing input/output functions. However, the Frankel reference is intended to be combined with Broder and Fitch, both of which disclose the use of multiple processors. Furthermore, Fitch discloses multiple processors executing kernels. Therefore, the combination therein does in fact suggest multiple processors executing kernels providing input/output functions.

12. Regarding claim 12, Applicant contends that claim 12 is allowable since it is dependent on claim 3, the parent claim of which arguments have been presented for. However, these arguments have been addressed at length above. Therefore, claim 12 stands rejected as discussed in the previous Office Action.

Conclusion

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed J Ali whose telephone number is (703) 305-8106. The examiner can normally be reached on Mon-Fri 8-5:30, 2nd Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William A Grant can be reached on (703) 308-1108. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Syed Ali
August 13, 2003

MAJID A. BANANKHAH
PRIMARY EXAMINER